

Search Plan and Results

Question

[What is the relationship between snacking and body weight? \(DGAC 2010\)](#)

Date Searched

12/2/2009

Inclusion Criteria

- January 2000 to present
- Systematic reviews and meta-analysis, randomized controlled trials or clinical controlled studies, large non-randomized observational studies, cohort, case-control studies
- Human subjects
- The sample size must equal 10 adults for each study group. For example, this would include 10 patients in the intervention group and 10 patients in the control or comparison group
- Less than 20%; preference for smaller dropout rates
- English language
- International
- Ages: Children under age 18 years; adults 19 years and older
- Populations: Healthy and those with elevated chronic disease risk; people with history of polyps adenomatous, adenoma or adenocarcinoma.

Exclusion Criteria

- Medical treatment or therapy
- Cross-sectional studies
- Narrative reviews, cross-sectional studies
- Diseased subjects (already diagnosed with disease related to study purpose)
- Hospitalized patients
- Malnourished or third-world populations or disease incidence not relative to US population (e.g., malaria)
- Animal studies
- In vitro studies
- Articles not peer reviewed (websites, magazine articles, Federal reports, etc.).

Search Terms: Search Vocabulary

(snack* AND (“food habits”[mh] OR eating[mh] OR “feeding behavior”[mh:noexp] OR

diet[mh])) AND ("body weight"[mh] OR adiposity[mh] OR "Body Mass Index"[majr] OR "Overweight"[majr] OR "Obesity"[majr] OR "Weight Gain"[mh] OR "Waist-Hip Ratio"[Mesh])

Electronic Databases

PubMed.

Total hits from all electronic database searches: 476

Total articles identified to review from electronic databases: 111

Articles Identified Via Handsearch or Other Means

Summary of Articles Identified to Review

Number of Primary Articles Identified: 8

Number of Review Articles Identified: 0

Total Number of Articles Identified: 8

Number of Articles Reviewed but Excluded: 103

List of Articles Included for Evidence Analysis

Children (6)

Cohort Studies (5)

Bisset S, Gauvin L, Potvin L, Paradis G. [Association of body mass index and dietary restraint with changes in eating behaviour throughout late childhood and early adolescence: A 5-year study.](#) *Public Health Nutr.* 2007 Aug; 10(8): 780-789. Epub 2007 Mar 7. PMID: 17381909.

Black MM, Papas MA, Bentley ME, Cureton P, Saunders A, Le K, Anliker J, Robinson N. Overweight adolescent African-American mothers gain weight in spite of intentions to lose weight. *J Am Diet Assoc.* 2006 Jan; 106(1): 80-87. PMID: 16390669.

Field AE, Austin SB, Gillman MW, Rosner B, Rockett HR, Colditz GA. [Snack food intake does not predict weight change among children and adolescents.](#) *Int J Obes Relat Metab Disord.* 2004 Oct; 28(10): 1, 210-1, 216. PMID: 15314623.

Francis LA, Lee Y, Birch LL. [Parental weight status and girls' television viewing, snacking, and body mass indexes](#). *Obes Res*. 2003 Jan; 11(1): 143-151. PMID: 12529497.

Phillips SM, Bandini LG, Naumova EN, Cyr H, Colclough S, Dietz WH, Must A. [Energy-dense snack food intake in adolescence: longitudinal relationship to weight and fatness](#). *Obes Res*. 2004 Mar; 12(3): 461-472. PMID: 15044663.

Case-Control Study (1)

Novaes JF, Franceschini Sdo C, Priore SE. [Mother's overweight, parents' constant limitation on the foods and frequent snack as risk factors for obesity among children in Brazil](#). *Arch Latinoam Nutr*. 2008 Sep; 58(3): 256-264. PMID: 19137988.

Adults (2)

Cohort Studies (2)

Halkjaer J, Tjønneland A, Overvad K, Sørensen TI. [Dietary predictors of 5-year changes in waist circumference](#). *J Am Diet Assoc*. 2009 Aug; 109(8): 1,356-1,366. PMID: 19631041.

Woo J, Cheung B, Ho S, Sham A, Lam TH. [Influence of dietary pattern on the development of overweight in a Chinese population](#). *Eur J Clin Nutr*. 2008 Apr; 62(4): 480-487. Epub 2007 Feb 28. PMID: 17327865.

List of Excluded Articles with Reason

Articles (A-K)	Reason for Exclusion
Alm A, Fåhraeus C, Wendt LK, Koch G, Andersson-Gäre B, Birkhed D. Body adiposity status in teenagers and snacking habits in early childhood in relation to approximal caries at 15 years of age . <i>Int J Paediatr Dent</i> . 2008 May; 18(3): 189-196. Epub 2008 Mar 6. PMID: 18328046.	Did not answer the question; did not examine the relationship between snacking and body weight.
Amosa T, Rush E, Plank L. Frequency of eating occasions reported by young New Zealand Polynesian and European women . <i>Pac Health Dialog</i> . 2001 Mar; 8(1): 59-65. PMID: 12017838.	Did not answer the question; did not examine the relationship between snacking and body weight.
Andersson I, Lennernäs M, Rössner S. Meal pattern and risk factor evaluation in one-year completers of a weight reduction program for obese men: The 'Gustaf study' . <i>J Intern Med</i> . 2000 Jan; 247(1): 30-38. PMID: 10672128.	Did not answer the question; examined the relationship between snack quality and body weight.

<p>Anschutz DJ, Engels RC, Van Strien T. Side effects of television food commercials on concurrent nonadvertised sweet snack food intakes in young children. <i>Am J Clin Nutr.</i> 2009 May; 89(5): 1, 328-1, 333. Epub 2009 Mar 25. PMID: 19321557.</p>	<p>Did not answer question; examined the relationship between TV viewing and snacking.</p>
<p>Antonuk B, Block LG. The effect of single serving versus entire package nutritional information on consumption norms and actual consumption of a snack food. <i>J Nutr Educ Behav.</i> 2006 Nov-Dec; 38(6): 365-370. PMID: 17142193.</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight.</p>
<p>Artinian NT, Schim SM, Vander Wal JS, Nies MA. Eating patterns and cardiovascular disease risk in a Detroit Mexican American population. <i>Public Health Nurs.</i> 2004 Sep-Oct; 21(5): 425-434. PMID: 15363023.</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight.</p>
<p>Astrup A, Bovy MW, Nackenhorst K, Popova AE. Food for thought or thought for food? A stakeholder dialogue around the role of the snacking industry in addressing the obesity epidemic. <i>Obes Rev.</i> 2006 Aug; 7(3): 303-312. PMID: 16866981.</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight.</p>
<p>Ayala GX, Rogers M, Arredondo EM, Campbell NR, Baquero B, Duerksen SC, Elder JP. Away-from-home food intake and risk for obesity: Examining the influence of context. <i>Obesity (Silver Spring)</i>. 2008 May; 16(5): 1, 002-1, 008. Epub 2008 Feb 28. PMID: 18309297.</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight.</p>
<p>Barker M, Robinson S, Wilman C, Barker DJ. Behaviour, body composition and diet in adolescent girls. <i>Appetite.</i> 2000 Oct; 35(2): 161-170. PMID: 10986109.</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight.</p>
<p>Bertéus Forslund H, Klingström S, Hagberg H, Löndahl M, Torgerson JS, Lindroos AK. Should snacks be recommended in obesity treatment? A 1-year randomized clinical trial. <i>Eur J Clin Nutr.</i> 2008 Nov; 62(11): 1, 308-1, 317. Epub 2007 Aug 15. PMID: 17700649.</p>	<p>Did not answer the question; examined snacking as a tool for active weight loss.</p>

<p>Bertéus Forslund H, Lindroos AK, Sjöström L, Lissner L. Meal patterns and obesity in Swedish women: A simple instrument describing usual meal types, frequency and temporal distribution. <i>Eur J Clin Nutr</i>. 2002 Aug; 56(8): 740-747. PMID: 12122550.</p>	<p>Did not answer question; examined the relationship between snacking and energy intake or satiety.</p>
<p>Bertéus Forslund H, Torgerson JS, Sjöström L, Lindroos AK. Snacking frequency in relation to energy intake and food choices in obese men and women compared to a reference population. <i>Int J Obes (Lond)</i>. 2005 Jun; 29(6): 711-719. PMID: 15809664.</p>	<p>Study design is cross-sectional.</p>
<p>bin Zaal AA, Musaiger AO, D'Souza R. Dietary habits associated with obesity among adolescents in Dubai, United Arab Emirates. <i>Nutr Hosp</i>. 2009 Jul-Aug; 24(4): 437-444. PMID: 19721923.</p>	<p>Study design is cross-sectional.</p>
<p>Booth DA, Blair AJ, Lewis VJ, Baek SH. Patterns of eating and movement that best maintain reduction in overweight. <i>Appetite</i>. 2004 Dec; 43(3): 277-283. PMID: 15527930.</p>	<p>Study examined subjects who had undergone active weight loss.</p>
<p>Bowman SA. Television-viewing characteristics of adults: correlations to eating practices and overweight and health status. <i>Prev Chronic Dis</i>. 2006 Apr; 3(2): A38. Epub 2006 Mar 15. PMID: 16539779.</p>	<p>Did not answer question; examined the relationship between TV viewing and snacking.</p>
<p>Brunt A, Rhee Y, Zhong L. Differences in dietary patterns among college students according to body mass index. <i>J Am Coll Health</i>. 2008 May-Jun; 56(6): 629-634. PMID: 18477517.</p>	<p>Study design is cross-sectional.</p>
<p>Campbell KJ, Crawford DA, Salmon J, Carver A, Garnett SP, Baur LA. Associations between the home food environment and obesity-promoting eating behaviors in adolescence. <i>Obesity (Silver Spring)</i>. 2007 Mar; 15(3): 719-730. PMID: 17372323.</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight.</p>
<p>Claesson AL, Holm G, Ernersson A, Lindström T, Nystrom FH. Two weeks of overfeeding with candy, but not peanuts, increases insulin levels and body weight. <i>Scand J Clin Lab Invest</i>. 2009; 69(5): 598-605. PMID: 19396658.</p>	<p>Did not include weight in analyses.</p>
<p>Coleman KJ, Geller KS, Rosenkranz RR, Dzewaltowski DA. Physical activity and healthy eating in the after-school environment. <i>J Sch Health</i>. 2008 Dec; 78(12): 633-640. PMID: 19000239.</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight.</p>

<p>Colles SL, Dixon JB, O'Brien PE. Night eating syndrome and nocturnal snacking: Association with obesity, binge eating and psychological distress. <i>Int J Obes (Lond)</i>. 2007 Nov; 31(11): 1, 722-1, 730. Epub 2007 Jun 19. PMID: 17579633.</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight.</p>
<p>Crooks DL. Trading nutrition for education: nutritional status and the sale of snack foods in an eastern Kentucky school. <i>Med Anthropol Q</i>. 2003 Jun; 17(2): 182-199. PMID: 12846116.</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight.</p>
<p>Cullen KW, Watson KB, Konarik M. Differences in fruit and vegetable exposure and preferences among adolescents receiving free fruit and vegetable snacks at school. <i>Appetite</i>. 2009 Jun; 52(3): 740-744. Epub 2009 Apr 11. PMID: 19427059.</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight.</p>
<p>de Bruijn GJ, Kremers SP, Schaalma H, van Mechelen W, Brug J. Determinants of adolescent bicycle use for transportation and snacking behavior. <i>Prev Med</i>. 2005 Jun; 40(6): 658-667. PMID: 15850862.</p>	<p>Did not include weight in analyses.</p>
<p>de Graaf C. Effects of snacks on energy intake: an evolutionary perspective. <i>Appetite</i>. 2006 Jul; 47(1): 18-23. Epub 2006 May 3. Review. PMID: 16675059.</p>	<p>Did not answer question; examined the relationship between snacking and energy intake or satiety.</p>
<p>DeLong AJ, Larson NI, Story M, Neumark-Sztainer D, Weber-Main AM, Ireland M. Factors associated with overweight among urban American Indian adolescents: findings from Project EAT. <i>Ethn Dis</i>. 2008 Summer; 18(3): 317-323. PMID: 18785446.</p>	<p>Study design is cross-sectional.</p>
<p>Dubois L, Farmer A, Girard M, Peterson K. Social factors and television use during meals and snacks is associated with higher BMI among pre-school children. <i>Public Health Nutr</i>. 2008 Dec; 11(12): 1, 267-1, 279. Epub 2008 Jun 12. PMID: 18547454.</p>	<p>Study design is cross-sectional.</p>
<p>Dubois L, Girard M, Potvin Kent M, Farmer A, Tatone-Tokuda F. Breakfast skipping is associated with differences in meal patterns, macronutrient intakes and overweight among pre-school children. <i>Public Health Nutr</i>. 2009 Jan; 12(1): 19-28. Epub 2008 Mar 18. PMID: 18346309.</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight.</p>

<p>Faith MS, Berkowitz RI, Stallings VA, Kerns J, Storey M, Stunkard AJ. Eating in the absence of hunger: A genetic marker for childhood obesity in prepubertal boys? <i>Obesity (Silver Spring)</i>. 2006 Jan; 14(1): 131-138. PMID: 16493131.</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight.</p>
<p>Francis LA, Birch LL. Does eating during television viewing affect preschool children's intake? <i>J Am Diet Assoc</i>. 2006 Apr; 106(4): 598-600. PMID: 16567158.</p>	<p>Did not answer question; examined the relationship between TV viewing and snacking.</p>
<p>Ghosh A, Bose K, Das Chaudhuri AB. Association of food patterns, central obesity measures and metabolic risk factors for coronary heart disease (CHD) in middle aged Bengalee Hindu men, Calcutta, India. <i>Asia Pac J Clin Nutr</i>. 2003; 12(2): 166-171. PMID: 12810406.</p>	<p>Study population not from a developed country as defined by the Human Development Index (2010).</p>
<p>Goldfield GS, Legg C. Dietary restraint, anxiety, and the relative reinforcing value of snack food in non-obese women. <i>Eat Behav</i>. 2006 Nov; 7(4): 323-332. Epub 2005 Nov 28. PMID: 17056408.</p>	<p>Did not include weight in analyses.</p>
<p>Green SM, Wales JK, Lawton CL, Blundell JE. Comparison of high-fat and high-carbohydrate foods in a meal or snack on short-term fat and energy intakes in obese women. <i>Br J Nutr</i>. 2000 Oct; 84(4): 521-530. PMID: 11103223.</p>	<p>Did not answer question; examined the relationship between snacking and energy intake or satiety.</p>
<p>Gubbels JS, Kremers SP, Stafleu A, Dagnelie PC, de Vries SI, de Vries NK, Thijs C. Clustering of dietary intake and sedentary behavior in 2-year-old children. <i>J Pediatr</i>. 2009 Aug; 155(2): 194-198. Epub 2009 Apr 25. PMID: 19394036.</p>	<p>Study design is cross-sectional.</p>
<p>Halford JC, Boyland EJ, Hughes GM, Stacey L, McKean S, Dovey TM. Beyond-brand effect of television food advertisements on food choice in children: The effects of weight status. <i>Public Health Nutr</i>. 2008 Sep; 11(9): 897-904. Epub 2007 Nov 16. PMID: 18005487.</p>	<p>Did not answer question; examined the relationship between TV viewing and snacking.</p>
<p>Hampl JS, Heaton CL, Taylor CA. Snacking patterns influence energy and nutrient intakes but not body mass index. <i>J Hum Nutr Diet</i>. 2003 Feb; 16(1): 3-11. PMID: 12581404.</p>	<p>Study design is cross-sectional.</p>

<p>Harris JL, Bargh JA, Brownell KD. Priming effects of television food advertising on eating behavior. <i>Health Psychol.</i> 2009 Jul; 28(4): 404-413. PMID: 19594263.</p>	<p>Did not answer question; examined the relationship between TV viewing and snacking.</p>
<p>Hudson CE, Cherry DJ, Ratcliffe SJ, McClellan LC. Head Start children's lifestyle behaviors, parental perceptions of weight, and body mass index. <i>J Pediatr Nurs.</i> 2009 Aug; 24:</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight.</p>
<p>Hume C, Singh A, Brug J, Mechelen W, Chinapaw M. Dose-response associations between screen time and overweight among youth. <i>Int J Pediatr Obes.</i> 2009; 4(1): 61-64. PMID: 18608632.</p>	<p>Study design is cross-sectional.</p>
<p>Jansen E, Mulkens S, Jansen A. Do not eat the red food!: prohibition of snacks leads to their relatively higher consumption in children. <i>Appetite.</i> 2007 Nov; 49(3): 572-577. Epub 2007 Apr 7. PMID: 17490786.</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight.</p>
<p>Johnson KM, Nelson KM, Bradley KA. Television viewing practices and obesity among women veterans. <i>J Gen Intern Med.</i> 2006 Mar; 21 Suppl 3: S76-S81. PMID: 16637951.</p>	<p>Study design is cross-sectional.</p>
<p>Julis RA, Mattes RD. Influence of sweetened chewing gum on appetite, meal patterning and energy intake. <i>Appetite.</i> 2007 Mar; 48(2): 167-175. Epub 2006 Oct 13. PMID: 17050036.</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight.</p>
<p>Kant AK, Graubard BI, Atchison EA. Intakes of plain water, moisture in foods and beverages, and total water in the adult US population: Nutritional, meal pattern, and body weight correlates: National Health and Nutrition Examination Surveys 1999-2006. <i>Am J Clin Nutr.</i> 2009 Sep; 90(3): 655-663. Epub 2009 Jul 29. PMID: 19640962.</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight.</p>
<p>Kerr MA, Rennie KL, McCaffrey TA, Wallace JM, Hannon-Fletcher MP, Livingstone MB. Snacking patterns among adolescents: A comparison of type, frequency and portion size between Britain in 1997 and Northern Ireland in 2005. <i>Br J Nutr.</i> 2009 Jan; 101(1): 122-131. Epub 2008 Jun 5. Erratum in: <i>Br J Nutr.</i> 2009 Mar; 101(6): 929. PMID: 18533071.</p>	<p>Did not include weight in analyses.</p>

Keski-Rahkonen A, Bulik CM, Pietiläinen KH, Rose RJ, Kaprio J, Rissanen A. Eating styles, overweight and obesity in young adult twins . <i>Eur J Clin Nutr</i> . 2007 Jul; 61(7): 822-829. Epub 2007 Jan 24. PMID: 17251930.	Study design is cross-sectional.
Kirk TR. Role of dietary carbohydrate and frequent eating in body-weight control . <i>Proc Nutr Soc</i> . 2000 Aug; 59(3): 349-358. Review. PMID: 10997651.	Study is a narrative review.

Articles (L-S)	Reason for Exclusion
Leahy KE, Birch LL, Rolls BJ. Reducing the energy density of multiple meals decreases the energy intake of preschool-age children . <i>Am J Clin Nutr</i> 2008 Dec; 88(6):1, 459-1, 468.	Did not answer the question; did not examine the relationship between snacking and body weight.
Levitsky DA, Halbmaier CA, Mrdjenovic G. The freshman weight gain: a model for the study of the epidemic of obesity . <i>Int J Obes Relat Metab Disord</i> . 2004 Nov; 28(11): 1, 435-1, 442. PMID: 15365585.	Study design is cross-sectional.
Li M, Dibley MJ, Sibbitt D, Yan H. Factors associated with adolescents' overweight and obesity at community, school and household levels in Xi'an City, China: results of hierarchical analysis . <i>Eur J Clin Nutr</i> . 2008 May; 62(5): 635-643. Epub 2007 Apr 18. PMID: 17440524.	Study population not from a developed country as defined by the Human Development Index (2010).
Lioret S, Touvier M, Lafay L, Volatier JL, Maire B. Are eating occasions and their energy content related to child overweight and socioeconomic status? <i>Obesity (Silver Spring)</i> . 2008 Nov; 16(11): 2, 518-2, 523. Epub 2008 Sep 4. PMID: 18772863.	Study design is cross-sectional.
Lioret S, Touvier M, Lafay L, Volatier JL, Maire B. Dietary and physical activity patterns in French children are related to overweight and socioeconomic status . <i>J Nutr</i> . 2008 Jan; 138(1): 101-107. PMID: 18156411.	Study design is cross-sectional.
Maddah M, Rashidi A, Mohammadpour B, Vafa R, Karandish M. In-school snacking, breakfast consumption, and sleeping patterns of normal and overweight Iranian high school girls: a study in urban and rural areas in Guilan, Iran . <i>J Nutr Educ Behav</i> . 2009 Jan-Feb; 41(1): 27-31. PMID: 19161917.	Study population not from a developed country as defined by the Human Development Index (2010).

<p>Maffeis C, Grezzani A, Perrone L, Del Giudice EM, Saggese G, Tatò L. Could the savory taste of snacks be a further risk factor for overweight in children? <i>J Pediatr Gastroenterol Nutr.</i> 2008 Apr; 46(4): 429-437. PMID: 18367957.</p>	<p>Study design is cross-sectional.</p>
<p>Marín-Guerrero AC, Gutiérrez-Fisac JL, Guallar-Castillón P, Banegas JR, Rodríguez-Artalejo F. Eating behaviours and obesity in the adult population of Spain. <i>Br J Nutr.</i> 2008 Nov; 100(5): 1, 142-1, 148. Epub 2008 Apr 1. PMID: 18377684.</p>	<p>Study design is cross-sectional.</p>
<p>Marmonier C, Chapelot D, Fantino M, Louis-Sylvestre J. Snacks consumed in a nonhungry state have poor satiating efficiency: influence of snack composition on substrate utilization and hunger. <i>Am J Clin Nutr.</i> 2002 Sep; 76(3): 518-528. PMID: 12197994.</p>	<p>Sample size less than inclusion criteria. Did not answer the question; did not examine the relationship between snacking and body weight.</p>
<p>Mattes RD, Campbell WW. Effects of food form and timing of ingestion on appetite and energy intake in lean young adults and in young adults with obesity. <i>J Am Diet Assoc.</i> 2009 Mar; 109(3): 430-437. PMID: 19248858.</p>	<p>Did not answer question; examined the relationship between snacking and energy intake or satiety.</p>
<p>Mazlan N, Horgan G, Whybrow S, Stubbs J. Effects of increasing increments of fat- and sugar-rich snacks in the diet on energy and macronutrient intake in lean and overweight men. <i>Br J Nutr.</i> 2006 Sep; 96(3): 596-606. PMID: 16925867.</p>	<p>Did not include weight in analyses.</p>
<p>McDonald CM, Baylin A, Arsenault JE, Mora-Plazas M, Villamor E. Overweight is more prevalent than stunting and is associated with socioeconomic status, maternal obesity, and a snacking dietary pattern in school children from Bogota, Colombia. <i>J Nutr.</i> 2009 Feb; 139(2): 370-376. Epub 2008 Dec 23. PMID: 19106320.</p>	<p>Study design is cross-sectional.</p>
<p>Mendez MA, Wynter S, Wilks R, Forrester T. Under- and overreporting of energy is related to obesity, lifestyle factors and food group intakes in Jamaican adults. <i>Public Health Nutr.</i> 2004 Feb; 7(1): 9-19. PMID: 14972067.</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight. Study population not from a developed country as defined by the Human Development Index (2010).</p>

<p>Nedeltcheva AV, Kilkus JM, Imperial J, Kasza K, Schoeller DA, Penev PD. <u>Sleep curtailment is accompanied by increased intake of calories from snacks.</u> <i>Am J Clin Nutr.</i> 2009 Jan; 89(1): 126-133. Epub 2008 Dec 3. PMID: 19056602.</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight.</p>
<p>Nicklas TA, Baranowski T, Cullen KW, Berenson G. <u>Eating patterns, dietary quality and obesity.</u> <i>J Am Coll Nutr.</i> 2001 Dec; 20(6): 599-608. Review. PMID: 11771675.</p>	<p>Study is a narrative review.</p>
<p>Nicklas TA, Demory-Luce D, Yang SJ, Baranowski T, Zakeri I, Berenson G. <u>Children's food consumption patterns have changed over two decades (1973-1994): The Bogalusa heart study.</u> <i>J Am Diet Assoc.</i> 2004 Jul; 104(7): 1, 127-1, 140. PMID: 15215772.</p>	<p>Did not include weight in analyses.</p>
<p>Nicklas TA, Morales M, Linares A, Yang SJ, Baranowski T, De Moor C, Berenson G. <u>Children's meal patterns have changed over a 21-year period: The Bogalusa Heart Study.</u> <i>J Am Diet Assoc.</i> 2004 May; 104(5): 753-761. PMID: 15127060.</p>	<p>Study design is cross-sectional.</p>
<p>Nicklas TA, Yang SJ, Baranowski T, Zakeri I, Berenson G. <u>Eating patterns and obesity in children. The Bogalusa Heart Study.</u> <i>Am J Prev Med.</i> 2003 Jul; 25(1): 9-16. PMID: 12818304.</p>	<p>Study design is cross-sectional.</p>
<p>O'Connor DB, Jones F, Conner M, McMillan B, Ferguson E. <u>Effects of daily hassles and eating style on eating behavior.</u> <i>Health Psychol.</i> 2008 Jan; 27(1 Suppl): S20-S31. PMID: 18248102.</p>	<p>Did not include weight in analyses.</p>
<p>Ogden J, Reynolds R, Smith A. <u>Expanding the concept of parental control: a role for overt and covert control in children's snacking behaviour?</u> <i>Appetite.</i> 2006 Jul; 47(1): 100-106. Epub 2006 May 8. PMID: 16682098.</p>	<p>Did not include weight in analyses.</p>
<p>Osterholz KM, Roe LS, Rolls BJ. <u>Incorporation of air into a snack food reduces energy intake.</u> <i>Appetite.</i> 2007 May; 48(3): 351-358. Epub 2006 Dec 26. PMID: 17188782.</p>	<p>Did not answer question; examined the relationship between snacking and energy intake or satiety.</p>
<p>Ovaskainen ML, Reinivuo H, Tapanainen H, Hannila ML, Korhonen T, Pakkala H. <u>Snacks as an element of energy intake and food consumption.</u> <i>Eur J Clin Nutr.</i> 2006 Apr; 60(4): 494-501. PMID: 16319836.</p>	<p>Did not include weight in analyses.</p>

<p>Poston WS, Haddock CK, Pinkston MM, Pace P, Karakoc ND, Reeves RS, Foreyt JP. Weight loss with meal replacement and meal replacement plus snacks: a randomized trial. <i>Int J Obes (Lond)</i>. 2005 Sep; 29(9): 1, 107-1, 114. PMID: 15925955.</p>	<p>Did not answer the question; examined snacking as a tool for active weight loss.</p>
<p>Raynor HA, Jelalian E, Vivier PM, Hart CN, Wing RR. Parent-reported eating and leisure-time activity selection patterns related to energy balance in preschool- and school-aged children. <i>J Nutr Educ Behav</i>. 2009 Jan-Feb; 41(1): 19-26. PMID: 19161916.</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight.</p>
<p>Raynor HA, Niemeier HM, Wing RR. Effect of limiting snack food variety on long-term sensory-specific satiety and monotony during obesity treatment. <i>Eat Behav</i>. 2006 Jan; 7(1): 1-14. Epub 2005 Jun 13. PMID: 16360618.</p>	<p>Did not answer the question; examined snacking as a tool for active weight loss.</p>
<p>Rodríguez-Rodríguez E, Aparicio A, Bermejo LM, López-Sobaler AM, Ortega RM. Changes in the sensation of hunger and well-being before and after meals in overweight/obese women following two types of hypoenergetic diet. <i>Public Health Nutr</i>. 2009 Jan; 12(1): 44-50. Epub 2008 Mar 7. PMID: 18325135.</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight.</p>
<p>Rolls BJ, Roe LS, Kral TV, Meengs JS, Wall DE. Increasing the portion size of a packaged snack increases energy intake in men and women. <i>Appetite</i>. 2004 Feb; 42(1): 63-69. PMID: 15036784.</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight.</p>
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<p>Snoek HM, van Strien T, Janssens JM, Engels RC. The effect of television viewing on adolescents' snacking: individual differences explained by external, restrained and emotional eating. <i>J Adolesc Health</i>. 2006 Sep; 39(3): 448-451. Epub 2006 Jul 10. PMID: 16919813.</p>	<p>Did not answer question; examined the relationship between TV viewing and snacking.</p>
<p>Stroebele N, Ogden LG, Hill JO. Do calorie-controlled portion sizes of snacks reduce energy intake? <i>Appetite</i>. 2009 Jun; 52(3): 793-796. Epub 2009 Mar 6. PMID: 19501784.</p>	<p>Did not include weight in analyses.</p>

Svendsen M, Tonstad S. Accuracy of food intake reporting in obese subjects with metabolic risk factors . <i>Br J Nutr.</i> 2006 Mar; 95(3): 640-649. PMID: 16512951.	Did not answer the question; did not examine the relationship between snacking and body weight.
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Articles (T-Z)	Reason for Exclusion
Tanasescu M, Ferris AM, Himmelgreen DA, Rodriguez N, Pérez-Escamilla R. Biobehavioral factors are associated with obesity in Puerto Rican children . <i>J Nutr.</i> 2000 Jul; 130(7): 1, 734-1, 742. PMID: 10867044.	Did not answer the question; did not examine the relationship between snacking and body weight.
Temple JL, Bulkley AM, Badawy RL, Krause N, McCann S, Epstein LH. Differential effects of daily snack food intake on the reinforcing value of food in obese and nonobese women . <i>Am J Clin Nutr.</i> 2009 Aug; 90(2): 304-313. Epub 2009 May 20. PMID: 19458018.	Did not answer the question; did not examine the relationship between snacking and body weight.
Temple JL, Chappel A, Shalik J, Volcy S, Epstein LH. Daily consumption of individual snack foods decreases their reinforcing value . <i>Eat Behav.</i> 2008 Aug; 9(3): 267-276. Epub 2007 Nov 6. PMID: 18549985.	Did not include weight in analyses.
Temple JL, Legierski CM, Giacomelli AM, Salvy SJ, Epstein LH. Overweight children find food more reinforcing and consume more energy than do nonoverweight children . <i>Am J Clin Nutr.</i> 2008 May; 87(5): 1, 121-1, 127. PMID: 18469229.	Did not answer the question; did not examine the relationship between snacking and body weight.
Thomson M, Spence JC, Raine K, Laing L. The association of television viewing with snacking behavior and body weight of young adults . <i>Am J Health Promot.</i> 2008 May-Jun; 22(5): 329-335. PMID: 18517093.	Did not answer question; examined the relationship between TV viewing and snacking.
Vader AM, Walters ST, Harris TR, Hoelscher DM. Television viewing and snacking behaviors of fourth- and eighth-grade schoolchildren in Texas . <i>Prev Chronic Dis.</i> 2009 Jul; 6(3): A89. Epub 2009 Jun 15. PMID: 19527590.	Study design is cross-sectional.
Vander Wal JS, Waller SM, Klurfeld DM, McBurney MI, Cho S, Kapila M, Dhurandhar NV. Effect of a post-dinner snack and partial meal replacement program on weight loss . <i>Int J Food Sci Nutr.</i> 2006 Feb-Mar; 57(1-2): 97-106. PMID: 16849118.	Did not answer the question; examined snacking as a tool for active weight loss.

<p>van der Horst K, Oenema A, Ferreira I, Wendel-Vos W, Giskes K, van Lenthe F, Brug J. A systematic review of environmental correlates of obesity-related dietary behaviors in youth. <i>Health Educ Res</i>. 2007 Apr; 22(2): 203-226. Epub 2006 Jul 21. Review. PMID: 16861362.</p>	<p>Did not include weight in analyses.</p>
<p>Vue H, Degeneffe D, Reicks M. Need states based on eating occasions experienced by midlife women. <i>J Nutr Educ Behav</i>. 2008 Nov-Dec; 40(6): 378-384. PMID: 18984495.</p>	<p>Did not include weight in analyses.</p>
<p>Waller CE, Du S, Popkin BM. Patterns of overweight, inactivity, and snacking in Chinese children. <i>Obes Res</i>. 2003 Aug; 11(8): 957-961. PMID: 12917500.</p>	<p>Study population not from a developed country as defined by the Human Development Index (2010).</p>
<p>Wang Y, Li J, Caballero B. Resemblance in dietary intakes between urban low-income African-American adolescents and their mothers: The healthy eating and active lifestyles from school to home for kids study. <i>J Am Diet Assoc</i>. 2009 Jan; 109(1): 52-63. PMID: 19103323.</p>	<p>Did not answer the question; did not examine the relationship between snacking and body weight.</p>
<p>Wang Z, Zhai F, Du S, Popkin B. Dynamic shifts in Chinese eating behaviors. <i>Asia Pac J Clin Nutr</i>. 2008; 17(1): 123-130. PMID: 18364337.</p>	<p>Study population not from a developed country as defined by the Human Development Index (2010).</p>
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<p>Whybrow S, Mayer C, Kirk TR, Mazlan N, Stubbs RJ. Effects of two weeks' mandatory snack consumption on energy intake and energy balance. <i>Obesity (Silver Spring)</i>. 2007 Mar; 15(3): 673-685. PMID: 17372318.</p>	<p>Did not include weight in analyses.</p>
<p>Yanover T, Sacco WP. Eating beyond satiety and body mass index. <i>Eat Weight Disord</i>. 2008 Sep; 13(3):119-28. PMID: 19011369.</p>	<p>Study design is cross-sectional</p>
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<p>Zizza C, Siega-Riz AM, Popkin BM. <u>Significant increase in young adults' snacking between 1977-1978 and 1994-1996 represents a cause for concern!</u> <i>Prev Med.</i> 2001 Apr; 32(4): 303-310. PMID: 11304090.</p>	<p>Did not include weight in analyses.</p>
<p>Zizza CA, Tayie FA, Lino M. <u>Benefits of snacking in older Americans.</u> <i>J Am Diet Assoc.</i> 2007 May; 107(5): 800-806. PMID: 17467375.</p>	<p>Did not include weight in analyses.</p>